Omartacaridae, a New Family of Water Mites from the Ground Waters of North America [1, 2]

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OMARTACARIDAE new family

Diagnosis: (Based on female, male unknown) Body elongated, integument soft; integument colorless, but some red pigment present in deeper tissues; muscle attachment plates absent; coxal area confined to anterior portion of body; coxal groups separated but lying very close together (Fig. 1); first, second, and fourth coxae reaching the midline, third coxae separated; fourth coxae reduced in size; genital field located well posterior to the coxal area; two elongated acetabular plates present; genital acetabula numerous; gonopore slit-like, much longer than acetabular plates in female; capitulum with a well developed rostrum; chelicera with two segments, chelicera fused medially; ventral side of P-IV with a tubercle bearing a peg-like seta; distodorsal portion of P-IV not extending far beyond insertion of P-V, not forming a chelate palp (Fig. 7); legs, especially the fourth pair, relatively long; a few swimming hairs present.

Nymph resembling adult except for lack of a gonopore.

Discussion: The new family does not seem to be closely related to any previously described water mite family, but there seems no doubt but that it should be assigned to the superfamily Hydryphantoidea Piersig. The structure of the palp, with its tubercle on P-IV and lack of a chelate P-IV and P-V, suggests that Omartacaridae is among the most highly evolved of the superfamily. A more refined placement of the new family must await the finding of the male and probably the larval stage. Two distinct types of nymphs have been taken, which differ among other things in structure of the palp and the first legs. There are two possible explanations for the two nymphal types.

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Either more than one species is present or there is a rather pronounced sexual dimorphism which also is exhibited by the nymphs.

Genus **OMARTACARUS** new genus

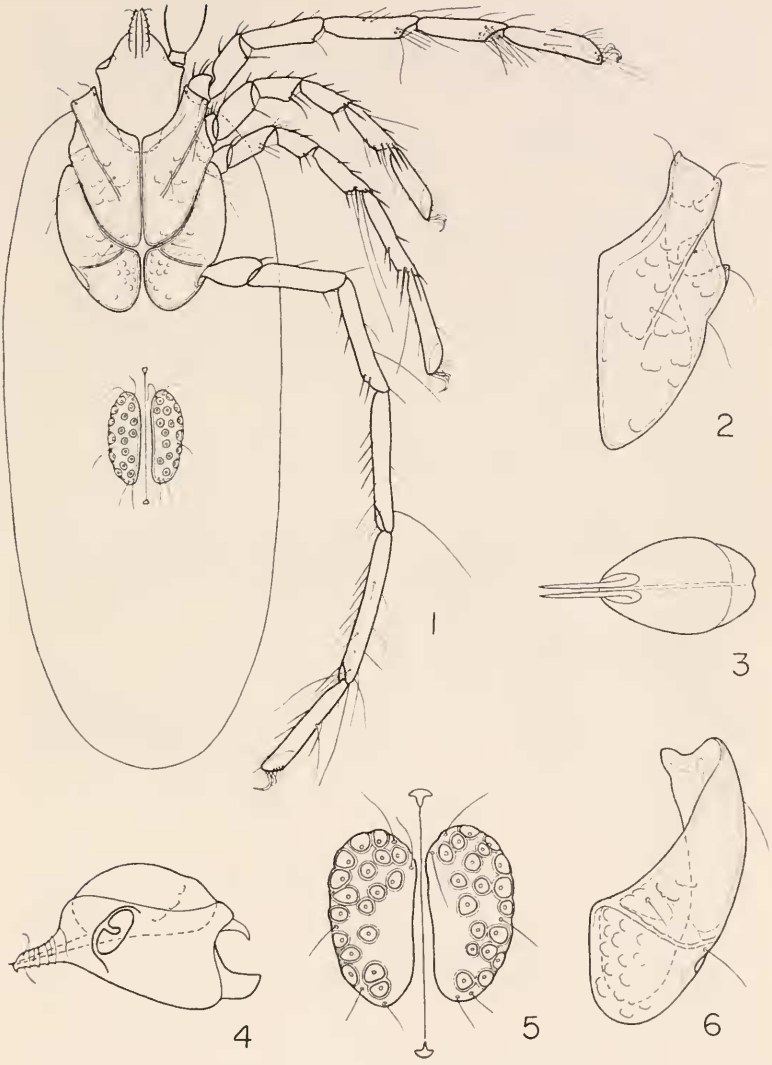
Genotype: Omartacarus elongatus n. sp.
Diagnosis: With the characters of the family Omartacaridae.

Omartacarus elongatus new species (Figs. 1–14)

Female: Body soft and very distensible, length approximately 835 μ–1090 μ; coxal area confined to anterior portion of body; coxal groups separated but lying very close together; capitular bay relatively wide; suture line between first and second coxae not extending to midline (Fig. 2); glandularia E-1 not observed, either they have shifted to sides of coxal margins at an angle which makes it impossible to observe them, or they are absent; third coxae somewhat triangular in shape, median margins not extending to midline (Fig. 1); fourth coxae small and somewhat semicircular in shape; median margins of fourth coxae broad (Fig. 6); few setae present on coxae; genital field lying considerably posterior to the coxal area; genital field consisting of two elongated acetabular plates separated by a slit-like gonopore (Fig. 5); pre- and postgenital sclerites very small, located well anterior and posterior to the acetabular plates; the individual acetabular plates 104 μ–133 μ in length, 45 μ–52μ in width; genital acetabula 15–19 on each side; acetabular plates with a few long setae.

Capitulum 167 μ–198 μ in length; anterior end of capitulum drawn out into a rostrum (Fig. 4); this rostrum with characteristic integumental wrinkles; capitular apodemes short; capitulum relatively wide, approximately one-half width of coxal area; chelicera two-segmented, distal segment shorter than proximal segment; chelicera fused medially (Fig. 3); chelicera 152 μ–167 μ in length.

Dorsal lengths of the palpal segments: P-I, 23 μ–29 μ; P-II, 102 μ–117 μ; P-III 40 μ–48 μ; P-IV, 73 μ–86 μ; P-V, 55 μ–59 μ; P-III expanded ventrally at distal end; P-IV narrow, bearing a large tubercle near distal end, this tubercle with a



Omartacarus elongatus n. sp. Female

Fig. 1, ventral view; Fig. 2, anterior coxal group; Fig. 3, chelicera, ventral view; Fig. 4, capitulum, lateral view; Fig. 5, genital field; Fig. 6, posterior coxal group.

short, heavy, peg-like seta; Figure 7 illustrates the proportions and chaetotaxy of the palp; dorsal lengths of the distal segments of the first leg: I-Leg-4, 122 μ–145 μ; I-leg-5, 118 μ–130 μ; I-Leg-6, 114 μ–129 μ; Figure 13 shows I-Leg-5 and 6; dorsal lengths of the segments of the fourth leg: IV-Leg-1, 76 μ–91 μ; IV-Leg-2, 114 μ–129 μ; IV-Leg-3, 160 μ–197 μ; IV-Leg-4, 194 μ–228 μ; IV-Leg-5, 199 μ–243 μ; IV-Leg-6, 160 μ–167 μ; Figure 1 illustrates the proportions and chaetotaxy of the legs; a few swimming hairs present.

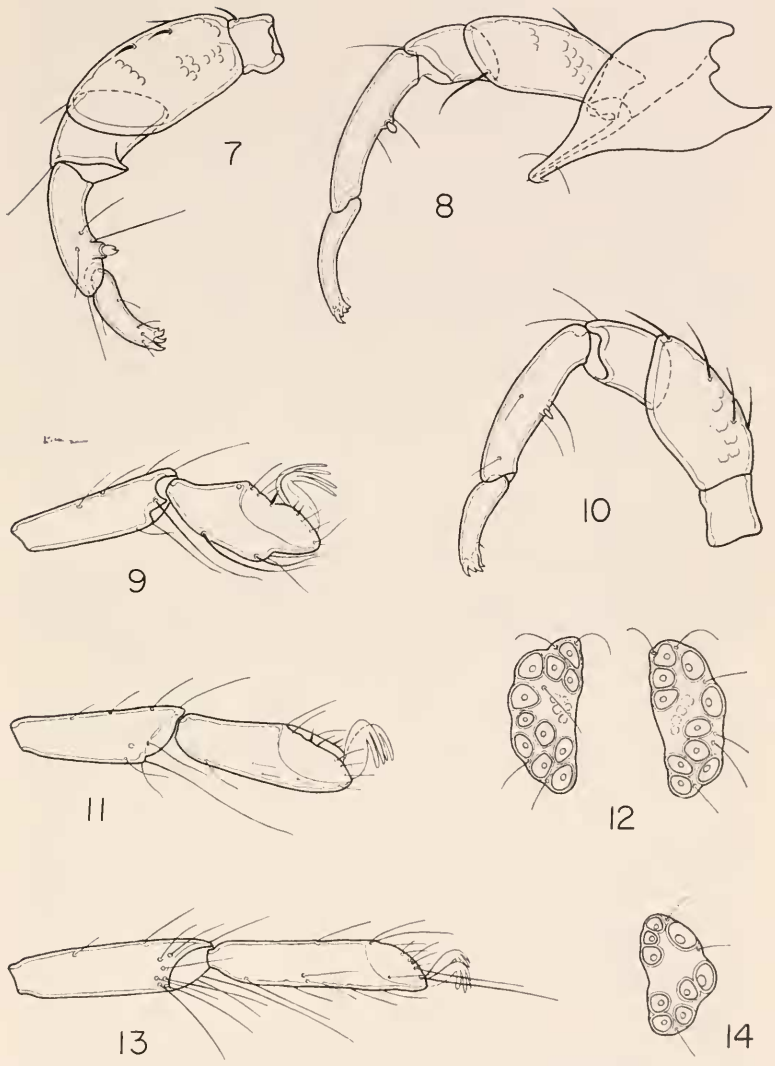
Male: Unknown.

Nymph, Type 1 (Figs. 10, 11, 14): This single specimen was taken in the type locality and, therefore, there seems little doubt but that it belongs to *O. elongatus*.

Body soft and distensible, approximately 940 μ in length; coxal area similar to that of adult female except fourth coxae are slightly longer and narrower; coxal area 258 μ in length, 198 μ in width; genital field lying well posterior to the coxal area; acetabular plates bearing approximately nine acetabula on each side (Fig. 14); gonopore absent; the individual acetabular plates 59 μ in length, 38 μ in width.

Capitulum 160 μ in length, with a well developed rostrum; dorsal lengths of the palpal segments: P-I, 27 μ; P-II, 83 μ; P-III, 39 μ; P-IV, 90 μ; P-V, 50 μ; P-IV proportionally longer than in adult female, peg-like seta located near middle of ventral side (Fig. 10); dorsal lengths of the distal segments of the first leg: I-Leg-4, 92 μ; I-Leg-5, 97 μ; I-Leg-6, 100 μ; greatest height of I-Leg-6, 35 μ; I-Leg-6 not greatly expanded at distal end (Fig. 11); dorsal lengths of the segments of the fourth leg: IV-Leg-1, 69 μ; IV-Leg-2, 91 μ; IV-Leg-3, 137 μ; IV-Leg-4, 156 μ; IV-Leg-5, 171 μ; IV-Leg-6, 141 μ; leg segments somewhat stockier than in adult female.

Nymph, Type 2 (Figs. 8, 9, 12): These two specimens were collected within the known range of *O. elongatus* adults, but not in the same locality. It is very possible that these are male nymphs, which are exhibiting a marked sexual dimorphism. However, until the male of *elongatus* has been found, their true status will remain uncertain.



Omartacarus elongatus n. sp. Female and nymphs.

Fig. 7, palp, female; Fig. 8, palp and capitulum, nymph Type 2; Fig. 9, I-Leg-5 and 6, nymph Type 2; Fig. 10, palp, nymph, Type 1; Fig. 11, I-Leg-5 and 6, nymph Type 1; Fig. 12, provisional genital field, nymph type 2; Fig. 13, I-Leg-5 and 6, female; Fig. 14, acetabular plate, nymph Type 1.

Body soft and distensible, approximately 760 μ–790 μ in length; coxal area 258 μ–274 μ in length, 198 μ in width; coxal area similar to that of preceding nymph; provisional genital field lying well posterior to the coxal area; acetabular plates slightly longer and narrower than in preceding nymph; length of individual acetabular plates 72 μ–76 μ, width 35 μ; genital acetabula 10–14 on each side; gonopore absent (Fig. 12).

Capitulum 163 μ–167 μ in length, with a well developed rostrum (Fig. 8); dorsal lengths of the palpal segments: P-I, 27 μ–28 μ; P-II, 95 μ–100 μ; P-III, 42 μ–45 μ; P-IV, 111 μ–114 μ; P-V, 73 μ–79 μ; P-II with a relatively heavy seta at distal end (Fig. 8); P-IV proportionally narrower than in adult female, with a peg-like seta on a tubercle near middle of ventral side; P-V proportionally longer and narrower than in preceding nymph (compare Figs. 8, 10); dorsal lengths of the distal segments of the first leg: I-Leg-4, 100 μ–104 μ; I-Leg-5, 110 μ–111 μ; I-Leg-6, 100 μ–104 μ; greatest height of I-Leg-6, 45 μ–47 μ; I-Leg-6 greatly expanded distally (Fig. 9); dorsal lengths of the segments of the fourth leg: IV-Leg-1, 64 μ–69 μ; IV-Leg-2, 84 μ–88 μ; IV-Leg-3, 132 μ–136 μ; IV-Leg-4, 152 μ–160 μ; IV-Leg-5, 167 μ–174 μ; IV-Leg-6, 137 μ–145 μ.

Discussion: The two types of nymphs differ as follows. I-Leg-6 of the Type 1 nymph is not greatly expanded distally as is the case in the Type 2 nymph (compare Figs. 9, 11). The Type 1 nymph more closely resembles the adult female in structure of I-Leg-6, although this segment is proportionally much stockier in the nymph. The palps of the two nymphs differ somewhat in proportions and chaetotaxy (compare Figs. 8, 10). The palps of both nymphs differ from the adult female in having P-IV longer and the peg-like seta placed near middle of the segment.

Types: Holotype, adult female, collected in a sand bar in a small stream 100 yards south of Wichita Mts. National Wildlife Refuge approximately five miles north of Indiahoma, Comanche Co., Oklahoma, July 14, 1961; Paratypes: one female, same data as holotype; one female, taken in a gravel bar in the Meramec River approximately eleven miles northeast of Salem, Dent Co., Missouri, July 1, 1961; one female, taken in a sand and

gravel bar in a small stream within the city limits of Patterson, Wayne Co., Missouri, July 11, 1960.

Since there is some doubt as to the specific placement of the nymphs, they are not assigned to the type series. The Type 1 nymph was collected with the holotype. The two Type 2 nymphs were taken in a gravel bar in a tributary of the Kiamichi River approximately one mile north of Albion, Pushmataha Co., Oklahoma, July 9, 1961.

The holotype will be deposited in the Chicago Natural History Museum, a paratype female will be placed in the United States National Museum.

Further Notes on West African Lycaenidae (Lepidoptera) [1]

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Spindasis (Lipaphnaeus) leonina paradoxa Schultze

Spindasis paradoxa Schultze 1908, Societas Entomologica 23: 130 (rainforest nr. Kiliwindi (Mungo R. region) and Assam (upper Cross R. region), N. W. Cameroun).

Spindasis leonina paradoxa: Aurivillius 1923, *in* Seitz, Grossschmett. Erde 13: 416.

Crudaria leonina bitje, ♀ form *paradoxa:* Peters 1952, Checklist Butterflies Ethiop. Reg.: 110.

Male. As in *bitje* except that the fore wing orange patch is smaller, not reaching Cu_2 and with its base only about as wide as $\frac{1}{3}$ the inner margin length. Hind wing tornus with the inner of the two usually inconspicuous silver spots markedly edged with black distally. Underside with basal area a little darker and duller, but not as much as in *l. leonina;* hind wing tornus with a conspicuous black spot in lobe.

Female. As in *bitje,* but with the black edge on the tornal silver spot as in male. Underside with basal yellow about as in *bitje;* tornal black spot as in male.

[1] Published pursuant to work as collaborating investigator on National Science Foundation grant no. G-14048.